

**IN THE ABSTRACT:**

Please amend the abstract of the disclosure as follows:

--The present invention provides precise temperature estimation in a heat treatment apparatus that estimates temperatures of process objects by using a thermal model and performs a heat treatment while performing a temperature control based on the estimated temperatures. The heat treatment apparatus ~~(1)~~ includes a processing vessel ~~(11)~~ accommodating plural wafers W, plural heaters ~~(31 to 33)~~ and plural temperature sensors ~~(S1 to S5)~~, and stores the thermal model. The heat treatment apparatus 1 estimates temperatures of the wafers W based on outputs of the temperature sensors ~~(S1 to S5)~~ by using the thermal model and controls the heaters ~~(31 to 33)~~ based on the estimated temperatures, applying a heat treatment to the wafers W. The thermal model for an individual apparatus is made by calibrating a standard thermal model designed for a standard apparatus. The standard model calibration is performed by heating an interior of the processing vessel ~~(11)~~, measuring the temperatures of the wafers W in the processing vessel ~~(11)~~, estimating the temperatures of the wafers W by using the thermal model, comparing the measured temperature and the estimated temperature, and calibrating the standard thermal model so that the measured temperature substantially coincides with the estimated temperature.--